ENGINEERING REPORT

PADRE DAM WATER RECYCLING FACILITY

EXPANSION TO 4.4 MGD

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List of Acronyms

Acronym or Phrase	Meaning
AAD	average annual demand
AF, AFY	acre-feet, acre-feet per year
ARRA	American Reinvestment and Recovery Act
AWT, AWTP	advanced water treatment, advanced water treatment plant
BOR	Department of Interior, Bureau of Reclamation
CEQA	California Environmental Quality Act
CUP	Conditional Use Permit issued by the City of Santee
DHS	Department of Health Services
DWR	California Department of Water Resources
El Monte, EMVRP	El Monte Valley, El Monte Valley Recharge Project
High Rating Study	Feasibility Study for High Rating the Santee Water Reclamation Facility, prepared by Black & Veatch, March 2006.
Helix, HWD	Helix Water District
IPS	Influent Pumping Station
LISA 1, 2	Local Investigations and Studies Assistance program, Phase 1 and Phase 2 respectively. Provides grants from the San Diego County Water Authority.
MBR	Membrane Bioreactor
METRO	City of San Diego Metropolitan Wastewater Department
mgd	million gallons per day
MND	Mitigated Negative Declaration
MWD	Metropolitan Water District of Southern California
NEPA	National Environmental Policy Act
NPDES	National Pollutant Discharge Elimination System
NPV	net present value
Padre Dam, PDMWD	Padre Dam Municipal Water District
PS	pump station
RFP	Request for Proposal
SDCWA	San Diego County Water Authority
Title XVI	Title XVI of the Reclamation Projects Authorization and Adjustment Act of 1992.
Title 22	Title 22 of the California Code of Regulations
WRF	Water Recycling Facility
WSA	Western Service Area - PDMWD
WWTP	Wastewater Treatment Plant

1.0 Introduction

The Padre Dam Municipal Water District (Padre Dam) operates a Water Recycling Facility (WRF) located in the northern portion of the City of Santee, San Diego County, California. The proposed WRF Expansion project would expand the capacity of the existing WRF, which converts wastewater generated within Padre Dam's Western Service Area (WSA) into Title 22 tertiary treated recycled water. The tertiary treated recycled water is then used to maintain the water levels of the Santee Lakes or delivered to customers, who primarily use it for landscape irrigation.

Currently, the WRF is having difficulty meeting recycled water demands during the summer months and in some years have had to supplement the recycled water system using a District-owned groundwater well. During the summer peak months, the Santee Lakes have also experienced water quality issues because they draw replenishment water from the oxidation ponds. The water in the oxidation pond, in general, is of lower quality because of water age. As the ponds empty, the water quality may degrade to a point to cause low dissolved oxygen level and resulting in adverse impacts to aquatic life in the lakes.

The purpose of this engineering report is to serve as a briefing document for Padre Dam staff, management team, and Board of Directors to facilitate making a decision to proceed with design of an expansion of the WRF to 4.4 mgd.

This document has been updated from the March 24, 2010 by modifying the financial analysis to reflect a reduced cost to treat wastewater at METRO due to sludge over-billing and reduced loading of suspended solids and chemical oxygen demand due to incorporation of In-Pipe Technology. The financial analysis was also updated to reflect the most recent estimates of the future rates for the sale of recycled water.

1.1 WRF Expansion Objectives

The objectives of the proposed project include:

1. Increase production of recycled water thereby providing an alternative source to reduce the use of potable water for irrigation. This would be accomplished by expanding the capacity of the existing WRF from 2.0 million gallons per day (mgd) to 4.4 mgd by installing additional conventional treatment facilities.
2. Maintain a high quality of treated water in order to meet regulatory standards for live stream discharge and continuing to meet water quality objectives for the Santee Lakes Recreational Facility.
3. Evaluate the potential to install an Advanced Water Treatment Plant (AWTP) on-site to send highly treated recycled water to a groundwater recharge and reclamation project such as Helix's El Monte Valley Recharge project (EMVRP).

1.2 Background

Padre Dam provides wastewater treatment and recycled water production services at its WRF located at the northerly end of the Santee Lakes. The original WRF was constructed in the early 1950's by the Santee County Water District for the purpose of providing sewer treatment to local development. In the early 1960's, the Department of Health approved the use of the lakes for recreation and fishing. A new water recycling facility was constructed in 1968, which was upgraded and expanded to its current form in 1997. The 1997 expansion included construction of a system of distribution pipelines within the City of Santee to supply recycled water to individual customers for landscape irrigation.

The existing WRF is a scalping plant (does not have the ability to treat solids) with a permitted treatment capacity of 2.0 mgd. The remainder of the wastewater generated in the WSA is treated at the City of San Diego Metropolitan Wastewater Department's (METRO) Point Loma Wastewater Treatment Plant (WWTP). The WRF produces tertiary treated recycled water that meets the requirements for reuse as specified in Title 22 of the California Code of Regulations. The recycled water is currently delivered to over 200 customers, mostly within the City of Santee, and is used primarily for irrigating landscape for schools, street medians, and other commercial and residential users.

1.3 Relevant Studies

Previous and concurrent studies performed with regard to expanding the WRF are summarized below:

- Feasibility Study for High Rating the Santee Water Reclamation Facility, Black & Veatch, March 2006. This study evaluated expansion of the plant from 2 mgd to one of the following capacities: 2.7 mgd, 4.0 mgd or 5.4 mgd. This study concentrated on serving recycled water customers within the Padre Dam service area and did not consider providing Advanced Water Treatment (AWT) for water sent to the El Monte Valley Recharge Project (EMVRP).
- El Monte Valley Recharge Project Feasibility Study - Helix completed this study in April 2006. The study evaluated the general feasibility of using advanced treated water for aquifer recharge.
- Feasibility Study for Padre Dam WRF Expansion as it relates to serving recycled water demand (Title 22 water) and providing AWT water for the EMVRP. A draft report has been completed showing options and costs for expanding the WRF to 4.4 mgd in Phase 1, then to 10 mgd in Phase 2.
- Draft Financial Feasibility Study for Padre Dam WRF Expansion as it relates to serving recycled water demand (Title 22 water) and providing AWT water for the EMVRP. A draft final report has been completed to evaluate financial feasibility to expand the WRF utilizing (1) Net Present Value, (2) Break-Even Analysis, and (3) Return on Investment methods.
- Draft Feasibility Study for Seasonal Storage.
- Draft Feasibility Study for Santee Lakes Water Quality Modeling Study.
- Draft Influent Flow Equalization Evaluation Study.
- Draft Headworks Evaluation Study.
- Draft UV Disinfection Alternative Evaluation
- Other National Pollutant Discharge Elimination System (NPDES) permit related studies.

2.0 Project Description

The first phase of the WRF expansion (from 2.0 to 4.4 mgd) would allow additional recycled water to be provided to the customers within the Padre Dam's WSA, which would reduce overall potable water use consumption within the District. Additionally, the first phase of the WRF expansion would have an option to include an AWTP that includes micro-filtration, reverse osmosis and advanced oxidation processes to produce highly purified water suitable for use in an indirect potable reuse project, such as the EMVRP proposed by the Helix Water District.

In addition to the AWTP, the engineering documents, partially funded by the LISA Grant Funding Program addressed the potential for a future Phase II expansion which could increase the capacity from 4.4 to 10.0 mgd if the EMVRP is proved capable of taking addition advanced treated water from the WRF. The proposed expansion from 2.0 to 4.4 mgd would be designed such that it would not preclude this possibility of expansion to 10 mgd.

Currently, the AWTP is an optional expansion task pending on the successful negotiation with Helix on the price of the advanced treated water. The design of the AWTP and pump station

(PS) would not commence unless Helix is committed to purchase the advanced treated water from the District. The costs of conveying the advanced treated water and onsite spreading facilities would be provided by Helix. The lead agency for the environmental review and documentation associated with the EMVRP is Helix.

The first phase of the WRF expansion project will mirror the existing conventional treatment processes at the existing WRF. Utilizing conventional treatment processes to convert wastewater into Title 22 tertiary treated recycled water is the preferred alternative because it is considerably less expansive than utilizing the membrane bio-reactor (MBR) technology. Additionally, Helix prefers conventionally treated water for its EMVRP because it would be more readily accepted by Department of Health Services (DHS). The proposed site plan for this expansion is shown in **Figure 1**.

Major project elements include the following:

1. Pump upsizing at the existing Influent Pump Station (IPS).
2. New headworks facility to remove grit and rags (either near the influent pump station or at the WRF).
3. Flow equalization basins (included in environmental documents, but not planned for design or construction as recent construction of the Cottonwood Diversion should prove that flow equalization basins at the WRF are not needed).
4. New primary clarifiers.
5. Addition of aeration/mixing equipment to Train 2 of the existing Bardenpho basins.
6. New secondary clarifier.
7. New tertiary flocculation sedimentation facility.
8. New tertiary biological polishing filters.
9. New chlorine contact basin and/or disinfection facility.
10. New AWT Facility, if an agreement is reached with Helix.

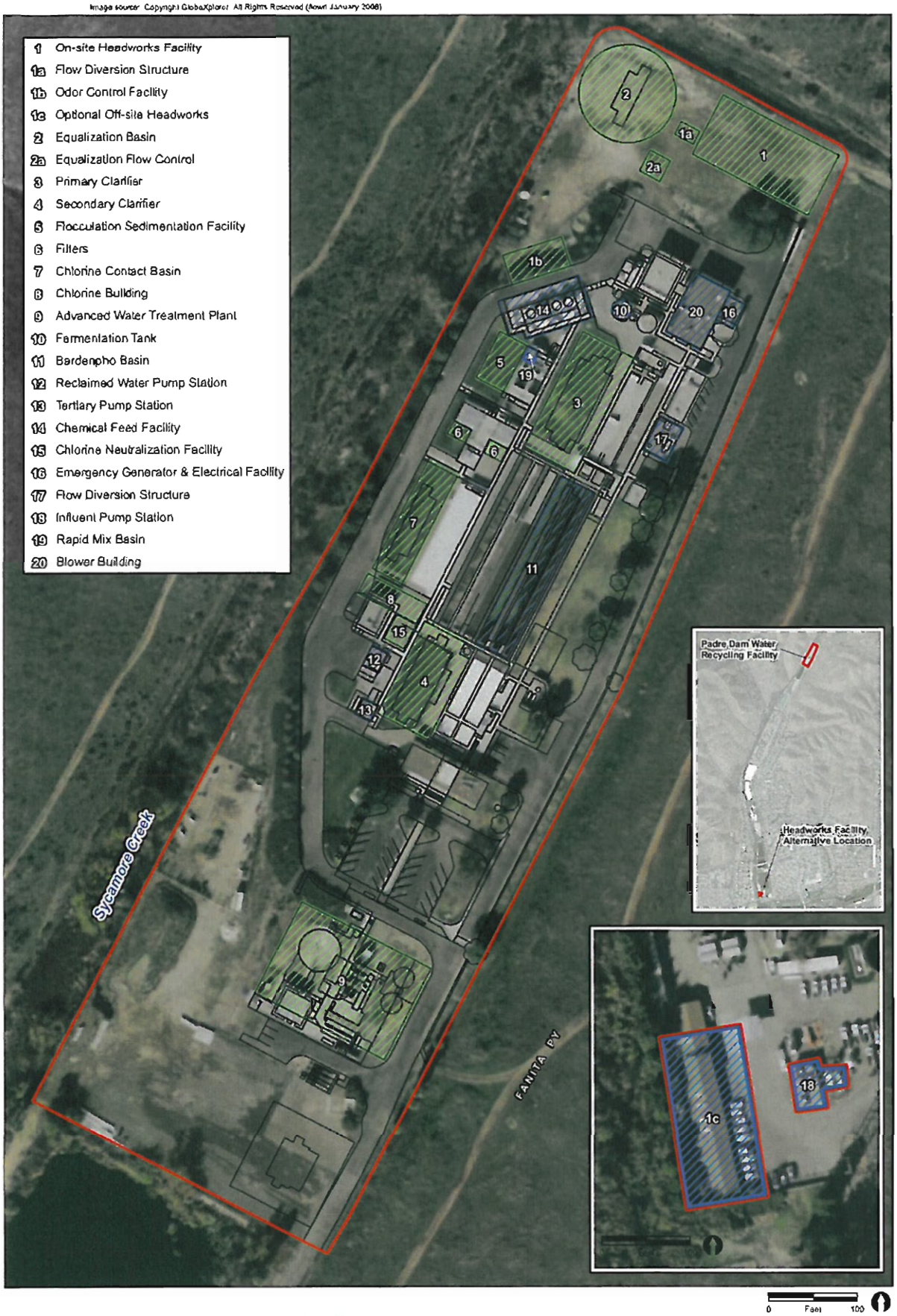

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FIGURE 1

Site Plan – Conventional Treatment Alternative

3.0 Recycled Water Demand

3.1 Current and Future Demand Projection

Currently the demand for recycled water includes the Santee Lakes/Ponds and irrigation users. The lake and ponds have been receiving approximately 1 mgd average annual demand (AAD) which includes consumptive use and discharges to Sycamore Creek (flushing). The Santee Lakes demand could be higher if Padre Dam chooses to enhance the lakes' water quality. The current AAD recycled water demands are approximately 0.8 mgd. Increased recycled demand is anticipated in the following categories of users:

TABLE 1
SUMMARY OF ADDITIONAL RECYCLED WATER USERS

Identified Customers by Category	AAD Identified (mgd)	Cumulative Additional AAD Demand
A. Future Customers Near Existing Recycled Water Lines	0.088	0.088
B. Existing Customers Using Potable Water for Irrigation, located near Existing RW Lines	0.092	0.180
C. Future Customers Serviced with $1.3M of New RW Lines	0.178	0.358
D. Carlton Oaks Golf Course 6 Months of Winter Flow	0.370	0.728
E. Customers Requiring More Extensive Facilities to Serve or Timing of Development is Highly Questionable.	1.178	1.906
F. Willowbrook Golf Course.	0.500	2.41

A detailed list of users in each category is presented in **Table 2.**

User categories are further defined as follows:

> **Category A - Future Customers Near Existing Water Lines.** These developments are currently planned or recently connected to the system and are located adjacent to existing recycled waterlines. Use of recycled water can be accomplished at little or no cost to Padre Dam. Three customers listed in this category were connected to the system in 2009: (1) Market Place at Santee, (2) Speer Field and (3) Forrester Creek Irrigation System.

TABLE 2
Potential New Recycled Water Customer Sorted by Availability of Facilities

ID #	Name of Potential New Customer / Developer	Estimated Time Online (Year)	Projected Average Usage (GPD)	Projected Average Usage (Ac-ft / YR)	Notes
A. Customers Near Existing Recycled Water Lines					
3	Riverwalk	2010	8,035	9.0	(1)
4	Santee Elementary School (MG Site)	2015	3,839	4.3	(1)
5	Caltrans Route 52	2012	6,071	6.8	(1)
9	Las Brisas	2010	982	1.1	(1)
11	Town Center Community Park Phase 2 - Sports Park	2010	14,373	16.1	(1)
13	Mission View Estates	2011	6,720	7.5	(1)
14	West Hills and Mast Commerical	2015	5,760	6.5	(1)
16	Chet Harriett Elementary	2010	8,160	9.1	(1)
21	WalMart Expansion	2011	960	1.1	(1)
25	Cajon Park Elementary - Ball Fields	2012	14,880	16.7	(1)
34	Marketplace @ Santee	2009	7,200	8.1	(1)
35	Weld Blvd Commerical Dev.	2015	4,320	4.8	(1)
36	Speer Field	2009	3,360	3.8	(1)
37	Marrokal	2011	2,400	2.7	(1)
40	Forrester Creek Irrigation System	2009	0	0.0	(1)
	Santee Street Cleaning	2011	714	0.8	(1)
	Sub-Total		88,000	98	
B. Existing Irrigation Users Using Potable Water, Loctated Near Existing RW Lines			92,000	103	
C. Customers Serviced by $1.3M WL Construction Project					
1	Edgemoor Business Park	2011	6,785	7.6	(2)
2	Edgemoor Hospital	2010	7,945	8.9	(2)
10	Sycamore Landfill	2010	119,985	134.4	(2)
15	Carlton Oaks School	2015	7,200	8.1	(2)
18	Sycamore Canyon Elementary	2015	5,280	5.9	(2)
19	Carlton Hills School	2009	12,000	13.4	(2)
20	Las Colinas	2013	14,400	16.1	(2)
31	County - Condos - Cottonwood West	2015	4,320	4.8	(2)
	Sub-Total		178,000	199	
	Sub-Total Categories A thru C		358,000	400	
D. Carlton Oaks Country Club (6 months of winter demand)					
7	Carlton Oaks Country Club (6 months of winter demand)	2011	370,000	414	
E. Customers Requiring Extensive Facilities to Service or Timing of Development is Highly Questionable.					
	Existing Irrigation Users Using Potable Water		307,996	345	(3)
6	Castle Rock	2015	74,098	83.0	(3)
8	Fanita Ranch	2025	699,017	783.0	(3)
12	Olsen Group Condos (N3)	2015	960	1.1	(3)
17	Christ the King Church - Mesa Rd	2010	1,920	2.2	(3)
22	Hill Creek Elementary	2015	14,880	16.7	(3)
23	Meadowrun	2015	4,800	5.4	(3)
24	Hillside Meadow	2015	11,520	12.9	(3)
26	Mast Business Park - Near Riverford Road	2015	3,360	3.8	(3)
27	Riverside Dr. Business Park	2015	9,120	10.2	(3)
29	Cuyamaca Development 1 (North of Silver Country Est.)	2015	6,240	7.0	(3)
30	Cuyamaca Development 2 (North of Silver Country Est.)	2015	12,960	14.5	(3)
32	County - Condos - Cottonwood East	2015	4,320	4.8	(3)
33	Drive-in Commerical Development	2015	4,320	4.8	(3)
38	Mission Villa Estates	2011	480	0.5	(3)
39	Cajon Speedway	2015	21,600	24.2	(3)
	Sub-Total		1,178,000	1319	
F. Willowbrook Golf Course					
28	Willowbrook Golf Course	2025	500,000	560.0	(3)
	Total		2,406,000	2,693	

Used 15% of total project acreage to determine irrigated area of unknown subdivisions.
Assumed 10,000 sq feet = 480 gpd for drought tolerant planting
Assumed 5,000 sq feet = 480 gpd for turf

Notes: (1) Customers Near Existing Recycled Water Lines
(2) Customers Serviced by $1.3M WL Construction Project
(3) Customers Requiring Extensive Facilities to Service or Timing of Development is Highly Questionable.

Category B - Existing Customers Using Potable Water for Irrigation, Located Near Existing Recycled Water Lines. These users have separate meters for their domestic (in-house) use and their outside irrigation use. They are currently using potable water for both their domestic and outdoor irrigation uses. The demand for this category of user is well documented and is based on existing meter records. There will be some cost of retrofitting the existing irrigation system from using potable water to recycled water. The average cost of the conversion to recycled water is estimated to be $17,500 per user.

Category C - Future Customers Serviced with $1.3 Million of New Recycled Waterlines. Customers in this category are not adjacent to existing recycled lines but can be reached for fewer construction dollars per unit of demand than customers in Categories E and F and therefore represent a quicker return on the investment. Included in this Category is the Sycamore Landfill which represents the largest user (67 percent of the total demand for Category B).

Category D - Carlton Oaks Country Club. The golf course currently irrigates with groundwater using on-site wells. During peak summer demands, low groundwater levels are causing production rate problems for the golf course. The golf course is interested in using recycled water during the winter months to keep their groundwater in reserve for use during the peak summer months. However, the golf course is only interested in using recycled water if the District adopts a seasonal discount for recycled water. For planning purposes, it is assumed that the golf course would use one half of their typical water use during the winter months.

Category E - Customers Requiring More Extensive Facilities to Serve or Timing of Development is Highly Questionable. The two largest users in this category are the Castlerock and Fanita Ranch developments and have had a history of delays and setbacks. These two users comprise approximately 89 percent of the total demand in this category.

Category F - Willowbrook Golf Course. Willowbrook Golf Course is an existing nine hole course located in the easterly portion of Padre Dam's Western Service area. The current source of water used for golf course irrigation is either well water similar to Carlton Oaks Golf Course or potable water from Lakeside Water District The golf course does lie within Padre Dam's Western Service area for sewer service and therefore could potentially be served using recycled water produced by Padre Dam.

Process water needed for treatment process for the Cable Ski Park is not included in the numbers above because the magnitude of this demand has not yet been determined. It will be several years before the Cable Ski Park demand will be realized.

3.2 Seasonal Variation of Recycled Water Demands and Seasonal Storage

Recycled water demands vary considerably during the year with the summer months having higher demand than the winter months. Should peak summer demands exceed the plant recycled water production capacity, the shortage of water must come from any combination of seasonal storage, well water and/or potable water. Monthly variation in recycled water for each demand category is presented in Attachment A.

An analysis was performed to show the seasonal storage needs for each demand category. It was assumed that no water was supplied by either Padre Dam's well or the potable water system. Tables located in Attachment A show the amount of seasonal storage required for each of the demand categories and different treatment plant sizes.

If the treatment plant is not expanded, there would be a need to expand the existing seasonal storage by approximately 63 MG just to keep up with existing demand and not supplement with well or potable water. One of the major reasons the additional storage is needed is to provide flushing of the lakes during the summer months (0.35 mgd flushing).

If the WRF were highrated to 2.7 mgd influent capacity, Category A customers could be served without addition to seasonal storage. Category B could be served with an addition of only 14 MG. To serve Category C, 43 MG of storage would need to be constructed.

With a 4.4 mgd influent treatment plant, additional seasonal storage would not be necessary until Category E was added.

4.0 El Monte Valley Groundwater Recharge Mining and River Restoration Project

In April 2006, Helix completed a study that analyzed the possibility of utilizing highly purified recycled water to recharge a groundwater basin in El Monte Valley. This project was to have the dual benefit of raising the groundwater level to support habitat restoration and then extracting groundwater to provide new raw water to supply the R.M. Levy Water Treatment Plant. This project could have numerous benefits to the local community including creating a recreational area for local residents, restoring natural habitat, improving the water quality in the El Monte Groundwater Basin, and expanding the local water portfolio by providing a new water supply.

The study examined the overall feasibility of the project including: 1) potential treatment processes needed to purify water prior to entering the groundwater basin; 2) the potential yield of the groundwater basin; 3) strategies for raising the groundwater table; 4) pipeline alignments from purified water sources to the El Monte Valley; and 5) funding opportunities for the project. Based on the preliminary modeling performed to date, it appears that, with careful management, the basin can support over 5,000 acre-feet per year (AFY) of recharge and extraction during normal operation.

Padre Dam was approached as the preferred source of the recycled water. Staff participated in reviewing and providing feedback throughout the study, and simultaneously analyzed the feasibility of providing 5,000 acre-feet per year of advanced treated recycled water (approximately 4.5 mgd). This would be a year-round demand and opportunity to treat and dispose of all wastewater generated within the District. Padre Dam would even need to import wastewater from the County Sanitation District to meet the ultimate demand.

The project would require Padre Dam to expand the WRF to 8 to 10 mgd in order to provide the 4.5 mgd of advanced treated recycled water in addition to providing Title 22 treated recycled water to our existing customers and the lakes. Additional advanced treatment facilities would need to be constructed to provide microfiltration, reverse osmosis, advanced oxidation utilizing hydrogen peroxide and ultraviolet radiation, and lime for pH adjustment. A purified water pipeline approximately 12 miles long from the WRF to the El Monte groundwater basin would also have to be constructed. Facilities would also be needed to convey more raw wastewater flow to the treatment plant including diversion structures, wastewater collection and influent pump station upgrades. Spreading grounds and extraction wells would also have to be constructed in the El Monte Valley to provide the groundwater recharge and collect the new raw water.

Helix's Feasibility Study for the El Monte Valley Recharge Project estimated that the total project cost would range between $64M and $153M, with a large part of that cost needed to expand the WRF and construct advanced treatment facilities. Part of this cost was anticipated to be funded by the sale of sand that would be mined from the El Monte Valley during the river restoration and in combination of selling treatment capacity at the Point Loma WWTP. There

is also a great potential for grant funding and regional participation that has caused Padre Dam and Helix to continue to pursue this opportunity.

The proposed WRF expansion to 4.4 mgd (tertiary) proposed will generate 2 mgd (2,240 AFY) of advanced treated water and will be constructed in a configuration that will allow a further expansion to 10 mgd and upgrade to advanced treatment in a subsequent phase. When complete, the ultimate benefits of these combined projects will include 4.5 mgd (5,000) AFY of advanced treated water for the El Monte Project and a reduction in the amount of future capacity upgrades that will be necessary at the Point Loma WWTP.

Table 3 shows the demands anticipated for the EMVRP. The project is currently estimated to have a maximum hydraulic capacity of 4.5 mgd (5,000 AFY). Helix has planned three phases for the EMVRP. This is shown in graphical form in **Attachment B**. Each phase has a different blend of AWT to raw water. In Phase 1, the Department of Health will only allow the AWT water to be 25 percent of the total flow sent to the aquifer and the DHS will limit the hydraulic detention time to one year (or 1.125 mgd of AWT water). The other 75 percent would most likely be raw water supplied by Helix. Once the hydraulics prove there is more than a six month travel time and no short-circuiting in the aquifer, then the percentage of AWT water can be increased with Health Department approval.

There will be seasonal variation associated with the amount of AWT water that Padre Dam can send to the EMVRP. **Table 3** shows the variations in flow that a plant expansion to 4.4 mgd influent could send to the EMVRP. As shown in the table, as more categories of demand are added within the District, less AWT water is available. The expansion to 4.4 mgd can provide up to 2.37 mgd during the winter months for all of the demand except Categories E and F. For Categories E and F, the summer demands for Title 22 water customers is so high that the AWT water available falls to zero. The average AWT water available when Categories E and F are added would not be acceptable for the EMVRP project.

TABLE 3
AWT Water Available to the EMVRP
4.4 mgd Treatment Plant
Total Lake/Pond Demand Including Flushing = 1.00 mgd
Lake/Pond Consumptive Use = 0.65 mgd, Flushing = 0.35 mgd

A. EMVRP AWT WATER USE NEEDS

Maximum Hydraulic Capacity Currently Estimated for the EMVRP = 4.5 mgd (5,000 AF/Yr)

	Ratio of AWT Water to Raw Water (Blend)						
	50%	60%	70%	75%	80%	90%	100%
AWT Flow MGD	2.25	2.7	3.15	3.375	3.6	4.05	4.5

B. WRF PRODUCTION - 4.4 MGD Influent

	EXISTING DEMAND			CATEGORY A - Demand by Existing WL's			CATEGORY B - Potable Irrg Users Near (E) WL's			CATEGORY C - Demand by $1.3M of new WL's		
	Min	Max	Ave	Min	Max	Ave	Min	Max	Ave	Min	Max	Ave
Raw Influent	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
% Loss Thru Conventional Treatment	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Title 22 Output	3.96	3.96	3.96	3.96	3.96	3.96	3.96	3.96	3.96	3.96	3.96	3.96
PD Demands	0.92	2.65	1.79	0.97	2.79	1.88	1.03	2.94	1.97	1.17	3.15	2.15
Remaining RW	3.04	1.31	2.17	2.99	1.17	2.08	2.93	1.02	1.99	2.79	0.81	1.81
% Loss Thru Advanced Treatment	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
AWT Output	**2.58**	**1.11**	**1.84**	**2.54**	**0.99**	**1.77**	**2.49**	**0.87**	**1.69**	**2.37**	**0.69**	**1.54**

	CATEGORY D - Carlton Oaks Golf Course			CATEGORY E - Highly Questionable Demand			CATEGORY F - Willowbrook Golf Course		
	Min	Max	Ave	Min	Max	Ave	Min	Max	Ave
Raw Influent	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
% Loss Thru Conventional Treatment	10%	10%	10%	10%	10%	10%	10%	10%	10%
Title 22 Output	3.96	3.96	3.96	3.96	3.96	3.96	3.96	3.96	3.96
PD Demands	1.17	3.15	2.51	1.86	5.05	3.69	2.48	5.77	4.19
Remaining RW	2.79	0.81	1.45	2.1	-1.09	0.27	1.48	-1.81	-0.23
% Loss Thru Advanced Treatment	15%	15%	15%	15%	15%	15%	15%	15%	15%
AWT Output	**2.37**	**0.69**	**1.23**	**1.79**	**-0.93**	**0.23**	**1.26**	**-1.54**	**-0.20**

5.0 Project Costs

Following is a summary of the construction cost estimates from the High Rating Study and the LISA 1 Study.

Summary of Construction Costs

Capacity	Mid Range Construction Cost (Million Dollars)	Comments
2.7 MGD Expansion		
WRF	$8	Would require significant seasonal storage to meet yearly demand. No water sent to El Monte. Less flexibility to manage flow and demands.
4.4 MGD Expansion		
WRF	$22	Conventional process uses current treatment process. No seasonal storage required unless Fanita Ranch is developed. Provide maximum flexibility to manage flow.
AWT	$16	Provides El Monte 2 mgd initially, 1.0 mgd at build-out.
10 MGD Expansion		
WRF	$82	Requires significant infrastructure to get raw wastewater to the WRF. May need to negotiate with the City of El Cajon or the County of San Diego to sell treatment capacity. Requires redundant treatment trains and solid handling processes to be independent from the METRO system.
AWT	$14	To Serve 4.5 mgd to El Monte

A summary of project costs is shown in **Table 4**. The shaded area in the table shows the design cost for the expansion associated with grant. Costs total $4.0M with ARRA grant money totaling $1.0M.

Planning level construction costs for plant expansion options and/or additional seasonal storage is presented in **Table 5**.

6.0 Funding Sources

SDCWA LISA Grants. The LISA program was established by SDCWA in 2007 to provide funding to facilitate studies and investigations of local water supply opportunities. The overall goal of the LISA program is to fund local groundwater, desalination, and water recycling studies, and investigations which would lead to new local water supply or increased dry-year water supplies.

Helix Water District Participation. Helix has tentatively agreed to reimburse Padre Dam the cost of the design of the AWTP should Helix not proceed with the EMVRP.

TABLE 4
PADRE DAM WRF EXPANSION
SUMMARY OF FUNDING CURRENTLY SECURED

Work Description	Pre-Construction Cost	Title 16 Grant Funding	ARRA Funding Through the Bureau of Rec	Grant Funds from SDCWA	Prop 50 Grant (1)	Percent Grant
NON-CONSTRUCTION ACTIVITIES & COTTONWOOD DIVERSION						
WRF High Rating Study	$250,000	$62,500	$0	$75,000		
LISA Study, Phase 1	$150,000	$37,500	$0	$70,000		
LISA Study, Phase 2						
Dudek/RECON Consultants - Environmental CEQA Permitting						
Mitigated Negative Declaration for a 4 mgd Plant Expansion	$154,940	$38,735	$0	$47,671		
Black & Veatch - Engineering Studies/Support						
BV Project Management	$12,710	$0	$3,177	$3,911		
Study of Additional Recycled Water Demand	$46,930	$0	$11,733	$14,439		
Influent Flow Equalization (4 mgd and 10 mgd)	$32,980	$0	$8,245	$10,147		
Effluent Management Options Including Seasonal Storage	$71,870	$0	$17,968	$22,113		
Santee Lakes Water Quality	$46,850	$0	$11,713	$14,415		
Engineering Support for CEQA Process	$120,000	$0	$30,000	$36,921		
NPDES Permitting	$226,780	$0	$56,750	$69,775		
Coordination with Regulators	$13,430	$0	$3,357	$4,132		
Financial Feasibility Technical Memorandum	$20,930	$0	$5,233	$6,440		
Sub-total for Black & Veatch	$592,480	$0	$148,174	$182,292		
Padre Dam Management	$70,000	$0	$17,500	$21,537		
Total LISA Grant Phase 2	$817,420	$38,735	$165,674	$251,500		
ADDITIONAL WORK REQUESTED FOR DESIGN						
Direct Project Administration Cost	$325,300	$0	$163,625	$0		
Contractural						
Surveys	$30,000	$0	$7,500	$0		
Geotechnical	$50,000	$0	$12,500	$0		
Preliminary Design	$1,080,000	$0	$223,550	$0		
Detailed Design	$2,520,000	$0	$941,250	$0		
Minus Grant Adjustments			-$347,100			
Sub-total for Additional Requested Work	$4,005,300	$0	$1,001,325	$0	$3,000,000	
Sub-Total Non-Construction Activities	$5,222,720	$138,735	$1,167,000	$397,000	$3,000,000	90%
Cottonwood Diversion Structure & Pipeline Replacement	$904,000	$200,000	$0	$0	$0	
Sub-Total Non-Construction Activities & Cottonwood Creek	$6,126,720	$338,735	$1,167,000	$397,000	$3,000,000	80%
CONSTRUCTION ACTIVITIES - PLANT EXPANSION TO 4.4 MGD - Includes a Phase 1 AWT						
Construction Management & Eng During Constr.	$9,180,800					
Construction	$38,000,000					
Sub-Total Constr, Activities - Plant Expansion to 4.4 mgd (2)	$47,180,800				$0	0%

Note. (1) Prop. 50 grant is for $3M, you have to spent about $4.3M before you get reimburse for the next $3M.
(2) Total only shows grants secured to date It is anticipated that a 25% Bureau of Reclamation Grant will be secured for the Plant Construction Phase
(3) Construction Cost Excludes $1.3 M of new Pipelines and Conversions to RW

ADDITIONAL WORK REQUESTED FOR DESIGN	Total Costs	Conventional Cost	AWT & PS Cost	BOR Grant
Direct Project Administration Cost	$325,300	$182,168	$143,132	$163,625
Contractural				
Surveys	$30,000	$16,800	$13,200	$7,500
Geotechnical	$50,000	$28,000	$22,000	$12,500
Preliminary Design	$1,080,000	$604,800	$475,200	$223,550
Detailed Design	$2,520,000	$1,411,200	$1,108,800	$941,250
Minus Grant Adjustments	$0		$0	-$347,100
Sub-total for Additional Requested Work	$4,005,300	$2,242,968	$1,762,332	$1,001,325

Total Design Cost $3,003,975 With BOR Grant
Design Cost Conventional WWTP $1,682,226 With BOR Grant
Current Budget for Design $2,100,000 W/O AWT

Table 5
Planning Level Construction Costs for Plant Expansion and/or Additional Seasonal Storage

Demand Scenario Description	Plant Title 22 Influent Capacity (MGD)	Plant Title 22 Production Capacity (MGD)	Additional Seasonal Storage Required (MG)	Plant Expansion Construction Cost (Mid Range)	Seasonal Storage Construction Cost (Mid Range)	Total Construction Cost (Mid Range)
Existing Irrigation & Lake Demand	2.0	1.8	63	$0	$19.5M	$19.5M
Category A - New Demand Next to Existing RW Lines	2.7 4.4	2.4 4.0	0 0	$8.0M $20.2M	$0 $0	$8.0M $20.2M
Category B – Convert Potable Irrigation Demands to RW	2.7 4.4	2.4 4.0	14 0	$8.0M $20.2M	$4.3M $0	$12.3M $20.2M
Category C – Demand with $1.3M Pipelines	2.7 4.4	2.4 4.0	43 0	$8.0M $20.2M	$13.3M $0	$21.3M $20.2M
Category D – Carlton Oaks Golf Course	4.4	4.0	0	$20.2M	$0	$20.2M
Category E – Fanita Ranch and Other High Risk Demands	4.4 5.1	4.0 4.6	83 0	$20.2M Not Estimated	$25.7M $0	$45.9M Not Estimated
Category F – Willowbrook Golf Course	4.7 5.8	4.2 5.2	154 0	Not Estimated Not Estimated	$47.7M $0	Not Estimated Not Estimated

1. Construction costs for WRF expansion to 4.4 MGD (Influent Capacity) were estimated based on adding 10% incremental cost to the estimated costs for WRF expansion to 4.0 MGD (Influent Capacity).
2. Construction costs for seasonal storage include costs for 0.5 mile of 12-inch pipeline and a 4 MGD pump station.

Bureau of Reclamation. Padre Dam has received funding commitments from the Department of Interior, Bureau of Reclamation (BOR), which is authorized to allocate up to $126M pursuant to Title XVI of the Reclamation Projects Authorization and Adjustment Act of 1992. The act authorized BOR to participate in the construction of five recycling projects, three of which were located in Southern California -- the San Diego Area Water Reclamation Program, Los Angeles Area Water Reclamation and Reuse Project, and the San Gabriel Basin Demonstration Project. Padre Dam's WRF expansion is part of the original San Diego Area Water Reclamation Program. Padre Dam's current allocation of the Title XVI funding authorizes up to 25 percent of the cost of planning, design, and construction of the first phase of the WRF expansion project. To be eligible for Title XVI funds, a water reclamation and reuse project must meet the specific BOR requirements under the National Environmental Policy Act (NEPA) and must also comply with State Revolving Fund requirements.

American Reinvestment and Recovery Act. Additionally, Padre Dam has received funding from the American Reinvestment and Recovery Act (ARRA) through the BOR, Title XVI program. The grant is for 25 percent of the design portion of the WRF expansion. The ARRA funding allowed the BOR to disburse grant funding to projects more quickly and lessened dependence on future congressional appropriations. However, all ARRA funded projects must be completed by November 2010.

State of California Proposition 50 Grant. Padre Dam has received a $3M grant from the State of California through Proposition 50 administered by the Department of Water Resources (DWR). Additionally, Helix has received $2.5M from the State of California through Proposition 50 for the EMVRP. The Districts are required to spend 10 percent of total project costs before grant monies are disbursed by DWR through SDCWA.

Rates. The price of conventionally treated recycled water is 90 percent of potable. It is anticipated that the largest future users, such as the Carlton Oaks Golf Course, would not buy recycled water unless it is set at a lower price. For advanced treated water, Helix would pay a negotiated cost, currently estimated in the range of $800 to $950 per AF.

Rebates from MWD and SDCWA. MWD is paying $250 per AF and SDCWA is paying $200 per AF. It is assumed Padre Dam will receive all $450 per AF incentive.

Demand Offsets. Facilities that may qualify to be paid for by the demand offset program include the proposed $2.5M construction of pipelines and the cost to convert existing irrigation users to recycled water.

7.0 Financial Feasibility Analysis

Black & Veatch prepared a financial feasibility analysis of various scenarios. The analysis of each scenario included the following elements:

1. Net present worth analysis for each alternative, with project costs and revenues taken over a 50-year period.
2. Sensitivity analysis to determine which factors had the most effect on the present value of an alternative.
3. Breakeven analysis to determine the minimum revenues from rates and new customers necessary to balance the cost of the WRF expansion.
4. Extent of the minimum distribution system necessary to bring in the breakeven revenues.
5. Impact on Rates.

The feasibility analysis is summarized in the following sections. The full analysis is currently being finalized by Black & Veatch in a memorandum titled Financial Feasibility Study for PDWRF Expansion.

7.1 Net Present Worth Analysis

A net present worth analysis was performed to compare the following three alternatives:

1. Baseline Case. This is a "Do Nothing" alternative where the WRF continues to produce 2 mgd.
2. Expansion to 4.4 mgd, Conventional Treatment. No advanced treated water would be produced for Helix.
3. Expansion to 4.4 mgd with AWT. The 4.4 mgd expansion adds advanced treatment of water for the Helix Groundwater Recharge Project.

A positive net present value (NPV) means that recycled revenues and savings from the project outweigh the cost. The value of all costs and revenues (future and present) are compared in present day dollars. If the NPV is positive, the project revenues are greater than the costs.

Options for the analysis were:

- Sale of METRO Capacity. Income to the District was assumed to be $10,000 per mgd with 1.26 mgd to be sold in Phase 1, and 3.03 mgd in Phase 2.
- Point Loma Conversion to Secondary Treatment. Cost was assumed to be $3,125,000 per mgd treated.
- Sale Price for AWT Water. The required sale price was calculated in the breakeven analysis to be in the range of $800 to $950 per AF.
- Reduced Water Sales. Assumed Fanita Ranch and Willowbrook Golf Course never develop and that the Carlton Oaks Country Club only uses half of their demand for the six winter months.

The rate scenario used in the NPV analysis assumed the base option of keeping the WRF at 2 mgd and that conversion to secondary treatment at Point Loma would happen. Net present values for the other expansion options were then calculated using the same rate increases. Over a 50 year period, wastewater rates would increase a total of 535 percent if Point Loma coverts to secondary. Recycled water rates were held to 383 percent for both cases over the 50 year period. The rate increases on a yearly basis are shown in **Attachment C**.

Table 6 summarizes the NPV of various alternatives. All the 4.4 mgd expansion alternatives have a positive value except the option where Helix would get the incentives from SDCWA and MWD.

This analysis has been updated by modifying the financial analysis to reflect a reduced cost to treat wastewater at METRO due to sludge over-billing and reduced loading of suspended solids and chemical oxygen demand due to incorporation of In-Pipe Technology. The financial analysis was also updated to reflect the most recent estimates of the future rates for the sale of recycled water.

7.2 Sensitivity Analysis

A sensitivity analysis was performed to identify which factors had the greatest effect on NPV. The most significant variables were:

- Sale of METRO Capacity.
- Sale of AWT water.
- Point Loma WWTP conversion to secondary treatment.
- Which agency receives MWD and SDCWA rebates.

TABLE 6

Summary of Total Cash Flow NPVs for PDWRF Phase 1 Expansion
(Relative to Baseline Condition)

Phase 1 Expansion without AWT[2]

Conservative Demand Assumption?

PLWWTP Conversion?	Yes[1]	No
Yes	Box 1 $37M	Box 3 $38M
No	Box 2 $11M	Box 4 $11M

Phase 1 Expansion with AWT[2]

Assumes No PLWWTP Conversion
AWT Water to EMVRP?

CWA/MWD Credits	Best Case[3]	Worst Case[4]
PD	Box 5 $33M	Box 7 $7M
Helix	Box 6 $3M	Box 8 -$12M

Notes:

1. Conservative Demand assumes that irrigation Categories A through D are served and Fanita Ranch and Willow Brook Golf Course never develop. Expansion to 4.0 mgd is assumed with the Conservative Demand assumption; expansion to 4.4 is assumed with the non-conservative assumption.
2. Value represents incremental increase in NPV from Baseline case.
3. Best case assumes annual average of 1.84 mgd of advanced treated water to El Monte with minimal recycled water to Padre Dam (existing irrigation users of 0.79 mgd and 1.00 mgd to the Lakes/Ponds).
4. Worst case assumes annual average of 1.23 mgd of advanced treated water to El Monte with Padre Dam to serve irrigation Categories A through D and provide 1.0 mgd to the Lakes/Ponds.

7.3 Breakeven Analysis

A breakeven analysis was performed assuming no conversion to secondary treatment at Point Loma, no participation by Helix, and no revenue from the El Monte Valley Recharge Project. A reduced rate structure was used for large water users during the winter months.

The analysis for expansion to 4.4 mgd shows that if Categories A, B and C are served, approximately 30 acre-feet per year would need to be sold to the Carlton Oakes Golf Course. For the Golf Course this is less than half of their winter demands.

HWD is taking the El Monte Project before their Board on May 19th to present the current project costs. Included in their financial assumptions are that Padre Dam would receive the CWA and MWD incentives of $200 and $250 respectively for water produce and that Helix would purchase the AWT water from Padre Dam at a price between $800 to $950/acre-foot. An additional assumption is that this price to purchase is in 2010 dollars and would increase by 5 percent per year thereafter. Padre Dam's break even analysis showed that a water sale rate within this range would be financially feasible.

8.0 Regulatory Issues

8.1 California Environmental Quality Act (CEQA)

RECON Environmental is currently preparing the environmental documentation necessary to proceed with construction of expansion to 4.4 mgd. It has recommended that a Mitigated Negative Declaration (MND) be the instrument to be used to meet CEQA and NEPA requirements. NEPA requirements also need to be met to receive Title 16 Federal Grant money from the Bureau Reclamation.

The following environmental studies are being prepared by RECON in support of the CEQA and NEPA documentations:

- Air Quality Technical Report
- Biological Resources Study/Burrowing Owl Survey
- Cultural Resources Study
- Paleontological Resources Letter Report
- Public Safety Memorandum
- Hydrology and Water Quality Technical Report
- Noise Technical Study

The MND will also evaluate the environmental impacts associated with expansion of the WRF utilizing either the membrane bioreactor technology or mirroring the existing conventional treatment process. All documentation necessary to meet environmental requirements is planned to be brought before the Board for approval in April of 2010.

8.2 Regional Water Quality Control Board Discharge Requirements

It is believed that obtaining new NPDES permit for expansion to 4.4 mgd is achievable as the approach would be similar to the recently acquired NPDES permit for the 2 mgd plant. Discharge to Sycamore Creek would be limited to 2 mgd with the same yearly mass loadings for nitrogen and phosphorous held to 1.0 and 0.1 mg/l respectively. If it is anticipated that the

WRF would treat flows in excess of the permit amount, raw sewage flow would simply not be treated at the WRF and would be sent to the Point Loma Treatment Plant for treatment.

8.3 State Department of Health Requirements

Padre Dam will need to revise the Waste Discharge Requirement for Land Application issued by the State DHS.

8.4 City of Santee Conditional Use Permit

Sale of water outside Padre Dam's service area could affect the conditions of the current Conditional Use Permit (CUP), issued by the City of Santee. The permit requires Padre Dam to serve the recycled water demands of users within the City of Santee first. This condition of the CUP could affect sale of water to Helix for the El Monte Valley Recharge Project. Use of recycled water outside Padre Dam's service area needs to be coordinated with the City of Santee.

The existing Conditional Use Permit (CUP) requires the WRF to limit odors at the property line for future development in the area. The proposed design will meet the CUP requirements.

9.0 Schedule

In order to completing the design by the end of November of 2010 and thus receiving ARRA funding, the schedule for implementing the expansion of the WRF, subject to Board approval is as follows:

Task	Schedule
Board Consideration and approval of issuing design RFP	May, 2010
Issue Design RFP	May, 2010
Award Design Contract	June, 2010
60% Design Workshop	August, 2010
Complete Design	November, 2010

10.0 Recommendations

This agenda item requests Board approval to proceed with design of the 4.4 mgd expansion, completing the design by the end of November 2010, and thus receive ARRA funding.

Padre Dam was awarded an ARRA grant of $1,001,325, or approximately 25 percent of the design costs. An important element of the grant is that the design must be completed by November 30, 2010.

A summary of design costs is shown in **Table 7**. Costs total $4,005,300 with ARRA grant money totaling $1,001,325. Padre Dam would not proceed with design of the AWT portion of the design until we receive a commitment from Helix that if El Monte does not proceed, Helix would pay for the cost of the AWT and pump station design. Design of the AWT and pump station is estimated to be $1,762,332. Therefore, Padre Dam's estimated cost for the design = $4,005,300 - $1,001,325 = $3,003,975 (including the AWT and pump station). The current budget for design is $2,400,000 (excluding AWT and pump station). Therefore, we have sufficient funds budgeted.

TABLE 7
SUMMARY OF DESIGN COSTS

ADDITIONAL WORK REQUESTED FOR DESIGN	Total Costs	Conventional Cost	AWT & PS Cost	BOR Grant
Direct Project Administration Cost	$ 325,300	$ 182,168	$ 143,132	$ 163,625
Contractural				
Surveys	$ 30,000	$ 16,800	$ 13,200	$ 7,500
Geotechnical	$ 50,000	$ 28,000	$ 22,000	$ 12,500
Prelimlnary Design	$ 1,080,000	$ 604,800	$ 475,200	$ 223,550
Detailed Design	$ 2,520,000	$ 1,411,200	$ 1,108,800	$ 941,250
Minus Grant Adjustments	$ -		$ -	$ (347,100)
Sub-total for Additional Requested Work	$ 4,005,300	$ 2,242,968	$ 1,762,332	$ 1,001,325

ATTACHMENT A

SYSTEM DEMAND

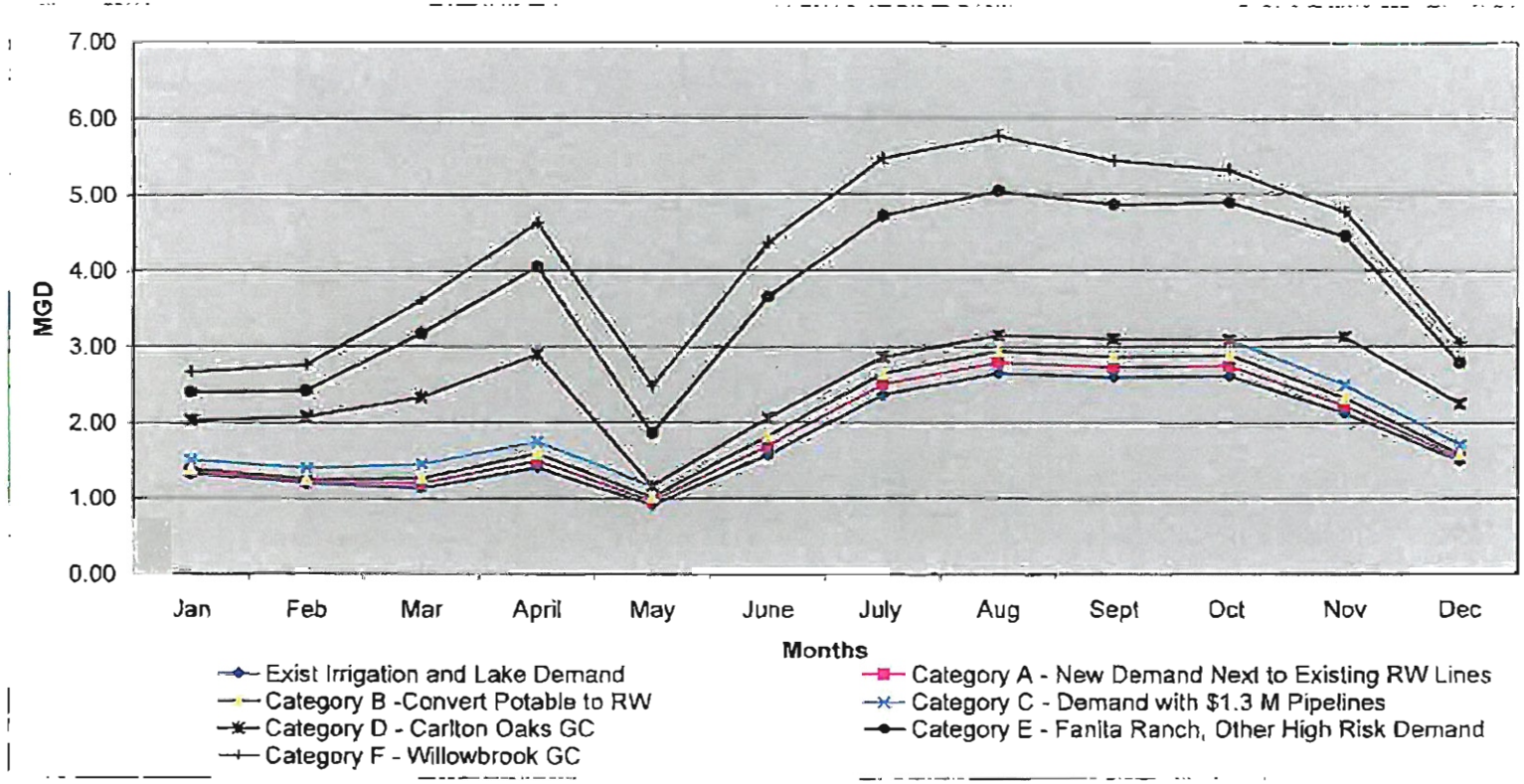
AND

SEASONAL STORAGE

Demands Based on Categories A through F

Month	Days per Month	Percent of Total Demand	Existing Recycled Water Demand	Potential Category "A" Customer	Potential Category "B" Customer	Potential Category "C" Customer	Carlton Oaks GC (Winter) Category "D"	Potential Category "E" Customer	Potential Category "F" Customer	Ultimate Total Irrig. Demand	Total Lake Demand (Consumptive Use + Flushing)	Exist RW Demand Plus Total Lake Demand	Ultimate Total Irrig + Lake Demands	Lake Consumptive Use (High)	Discharge to Sycamore Creek, Lake Flushing
Jan	31	2.7%	0.25	0.03	0.03	0.12	0.52	0.37	0.26	1.57	1.09	1.34	2.66	0.74	0.35
Feb	28	2.2%	0.23	0.03	0.03	0.15	0.67	0.34	0.34	1.78	0.98	1.21	2.76	0.83	0.35
Mar	31	6.1%	0.56	0.06	0.07	0.19	0.87	0.84	0.44	3.03	0.58	1.14	3.61	0.23	0.35
April	30	8.1%	0.78	0.09	0.09	0.18	1.14	1.18	0.57	3.98	0.64	1.42	4.62	0.29	0.35
May	31	5.0%	0.45	0.05	0.05	0.15	0.00	0.69	0.62	2.02	0.46	0.92	2.48	0.11	0.35
June	30	11.2%	1.07	0.12	0.12	0.23	0.00	1.60	0.71	3.85	0.51	1.58	4.37	0.18	0.35
July	31	13.4%	1.25	0.14	0.15	0.21	0.00	1.86	0.78	4.35	1.12	2.37	5.47	0.77	0.35
Aug	31	13.7%	1.27	0.14	0.15	0.21	0.00	1.90	0.72	4.39	1.38	2.65	5.77	1.03	0.35
Sept	30	12.2%	1.18	0.13	0.14	0.24	0.00	1.75	0.58	4.02	1.42	2.60	5.44	1.07	0.35
Oct	31	12.9%	1.20	0.13	0.14	0.20	0.00	1.79	0.42	3.90	1.41	2.61	5.31	1.06	0.35
Nov	30	9.2%	0.88	0.10	0.10	0.18	0.64	1.31	0.32	3.51	1.25	2.13	4.76	0.90	0.35
Dec	31	3.8%	0.36	0.04	0.04	0.12	0.54	0.53	0.27	1.90	1.15	1.51	3.05	0.80	0.35
Yearly Average		100%	0.79	0.09	0.09	0.18	0.37	1.18	0.50	3.19	1.00	1.79	4.19	0.65	0.35
				0.09		0.06									
											Min	0.92			
											Max	2.65			

	Existing Demand + Total Lake Demand +					
	Potential Category "A" Customer	Potential Category "B" Customer	Potential Category "C" Customer	Carlton Oaks GC (Winter) Category "D"	Potential Category "E" Customer	Potential Category "F" Customer
	1.38	1.39	1.51	2.03	2.40	2.68
	1.23	1.28	1.40	2.08	2.42	2.76
	1.21	1.27	1.48	2.33	3.17	3.81
	1.50	1.59	1.75	2.89	4.05	4.62
	0.97	1.03	1.17	1.17	1.86	2.48
	1.70	1.83	2.06	2.06	3.68	4.37
	2.51	2.65	2.86	2.86	4.72	5.47
	2.79	2.94	3.15	3.15	5.05	5.77
	2.73	2.86	3.10	3.10	4.86	5.44
	2.75	2.89	3.09	3.09	4.89	5.31
	2.23	2.33	2.48	3.13	4.44	4.76
	1.55	1.59	1.71	2.25	2.78	3.05
	1.88	1.97	2.15	2.51	3.89	4.19
Min	0.97	1.03	1.17	1.17	1.86	2.48
Max	2.79	2.94	3.15	3.15	5.05	5.77


7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
MGD
Jan
Feb
Mar
April
May
June
July
Aug
Sept
Oct
Nov
Dec
Months
Exist Irrigation and Lake Demand
Category A - New Demand Next to Existing RW Lines
Category B -Convert Potable to RW
Category C - Demand with $1.3 M Pipelines
Category D - Carlton Oaks GC
Category E - Fanita Ranch, Other High Risk Demand
Category F - Willowbrook GC

Demand Scenarios and Treatment Plant and Seasonal Storage Needs

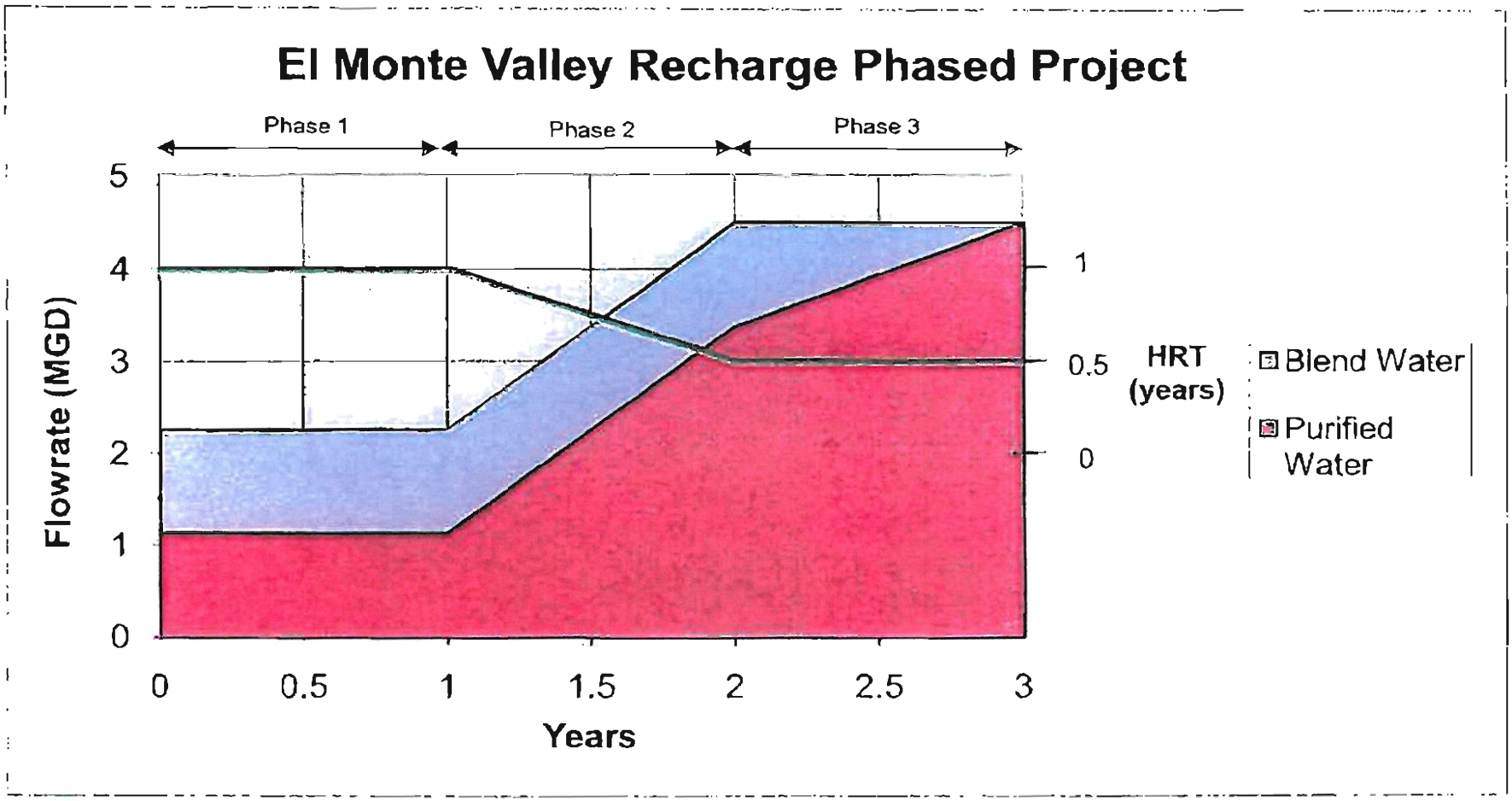
Demand Scenario Description	Total Average Annual Demand[1] (MGD)	Peak Summer Month Demand (MGD)	Plant Title 22 Influent Capacity (MGD)	Plant Title 22 Production Capacity[2] (MGD)	Total Seasonal Storage Required[3] (MG)	Existing Seasonal Storage (MG)	Additional Seasonal Storage Required (MG)
Existing Irrigation & Lake Demand	1.79	2.65	2.0	1.8	103	40	63
Category A - New Demand Next to Existing RW Lines	1.88	2.79	2.7 4.4	2.4 4.0	36 0	40 40	0 0
Category B – Convert Potable Irrigation Demands to RW	1.97	2.94	2.7 4.4	2.4 4.0	54 0	40 40	14 0
Category C – Demand with $1.3M Pipelines	2.15	3.15	2.7 4.4	2.4 4.0	83 0	40 40	43 0
Category D – Carlton Oaks Golf Course	2.51	3.15	4.4	4.0	0	40	0
Category E – Fanita Ranch and Other High Risk Demands	3.69	5.05	4.4 5.1[4]	4.0 4.6	123 34	40 40	83 0
Category F – Willowbrook Golf Course	4.19	5.77	4.7[5] 5.8[4]	4.2 5.2	194 37	40 40	154 0

1. Includes existing demand for recycled water customers and lakes. Includes total lake demand of 1.0 mgd, which is evapotranspiration plus flushing.
2. Assumes approximately 10% water loss through the plant due to sludge, evaporation, and other losses.
3. Assumes no potable or raw water supplementation.
4. Minimum influent plant capacity required to meet the peak summer month demand without requiring additional seasonal storage.
5. Minimum influent plant capacity required to meet the annual average demand.

ATTACHMENT B

EL MONTE VALLEY RECHARGE

PHASED PROJECT


El Monte Valley Recharge Phased Project
Phase 1
Phase 2
Phase 3
Flowrate (MGD)
5
4
3
2
1
0
0
0.5
1
1.5
2
2.5
3
Years
1
0.5
0
HRT
(years)
Blend Water
Purified
Water

ATTACHMENT C

RATE INCREASES

WITH NO EXPANSION AND

WITH POINT LOMA CONVERSION TO

SECONDARY

ATTACHMENT C

BASE OPTION (No Expansion)
RATES NEEDE WITH POINT LOMA CONVERSION TO SECONARY

Fiscal Year Ending June 30,	Baseline Case			
	Wastewater		Recycled Water	
	Annual	Cumulative	Annual	Cumulative
	%	%	%	%
2010	5.0%	5.0%	16.2%	0.0%
2011	5.0%	10.3%	10.3%	10.3%
2012	5.0%	15.8%	9.2%	20.4%
2013	5.0%	21.6%	3.0%	24.1%
2014	5.0%	27.6%	3.0%	27.8%
2015	5.0%	34.0%	3.0%	31.6%
2016	5.0%	40.7%	3.0%	35.6%
2017	5.0%	47.7%	3.0%	39.6%
2018	5.0%	55.1%	3.0%	43.8%
2019	5.0%	62.9%	3.0%	48.1%
2020	5.0%	71.0%	3.0%	52.6%
2021	5.0%	79.6%	3.0%	57.2%
2022	5.0%	88.6%	3.0%	61.9%
2023	5.0%	98.0%	3.0%	66.7%
2024	3.0%	103.9%	3.0%	71.7%
2025	3.0%	110.1%	3.0%	76.9%
2026	3.0%	116.4%	3.0%	82.2%
2027	3.0%	122.8%	3.0%	87.7%
2028	3.0%	129.5%	3.0%	93.3%
2029	3.0%	136.4%	3.0%	99.1%
2030	2.0%	141.1%	3.0%	105.1%
2031	2.0%	146.0%	3.0%	111.2%
2032	3.0%	153.3%	3.0%	117.5%
2033	3.0%	160.9%	3.0%	124.1%
2034	3.5%	170.1%	3.0%	130.8%
2035	3.5%	179.5%	3.0%	137.7%
2036	3.5%	189.3%	3.0%	144.8%
2037	3.5%	199.4%	3.0%	152.2%
2038	3.5%	209.9%	3.0%	159.8%
2039	3.0%	219.2%	3.0%	167.5%
2040	3.0%	228.8%	3.0%	175.6%
2041	3.0%	238.7%	3.0%	183.8%
2042	3.5%	250.5%	3.0%	192.4%
2043	3.5%	262.8%	3.0%	201.1%
2044	3.5%	275.5%	3.0%	210.2%
2045	3.5%	288.6%	3.0%	219.5%
2046	3.0%	300.3%	3.0%	229.1%
2047	3.0%	312.3%	3.0%	238.9%
2048	4.0%	328.8%	3.0%	249.1%
2049	4.0%	345.9%	3.0%	259.6%
2050	5.0%	368.2%	3.0%	270.4%
2051	5.0%	391.6%	3.0%	281.5%
2052	5.0%	416.2%	3.0%	292.9%
2053	3.0%	431.7%	3.0%	304.7%
2054	3.0%	447.7%	3.0%	316.8%
2055	3.0%	464.1%	3.0%	329.3%
2056	3.0%	481.0%	3.0%	342.2%
2057	3.0%	498.4%	3.0%	355.5%
2058	3.0%	516.4%	3.0%	369.1%
2059	3.0%	534.9%	3.0%	383.2%